

# **Smoke Management Techniques**

## **Unit 6A - Regulations**



**Robert Habeck**  
**Montana Department of Environmental Quality**  
**January 9, 2008**

# Objectives

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- Recognize the dilemma.
- Recognize smoke management is the LAW.
- State / federal regulations.
- Montana air regulations review.



# The Dilemma

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Just When You Thought it Was Safe  
to go Back Into The Woods And do a  
Little Burning...



# Train ....

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## Healthy Forest Restoration Act of 2003:

*“...The uncontrolled growth of forest fuels, left by years of neglect, chokes off nutrients from trees and provides a breeding ground for insects and disease.”*

- President George Bush



# Wreck !

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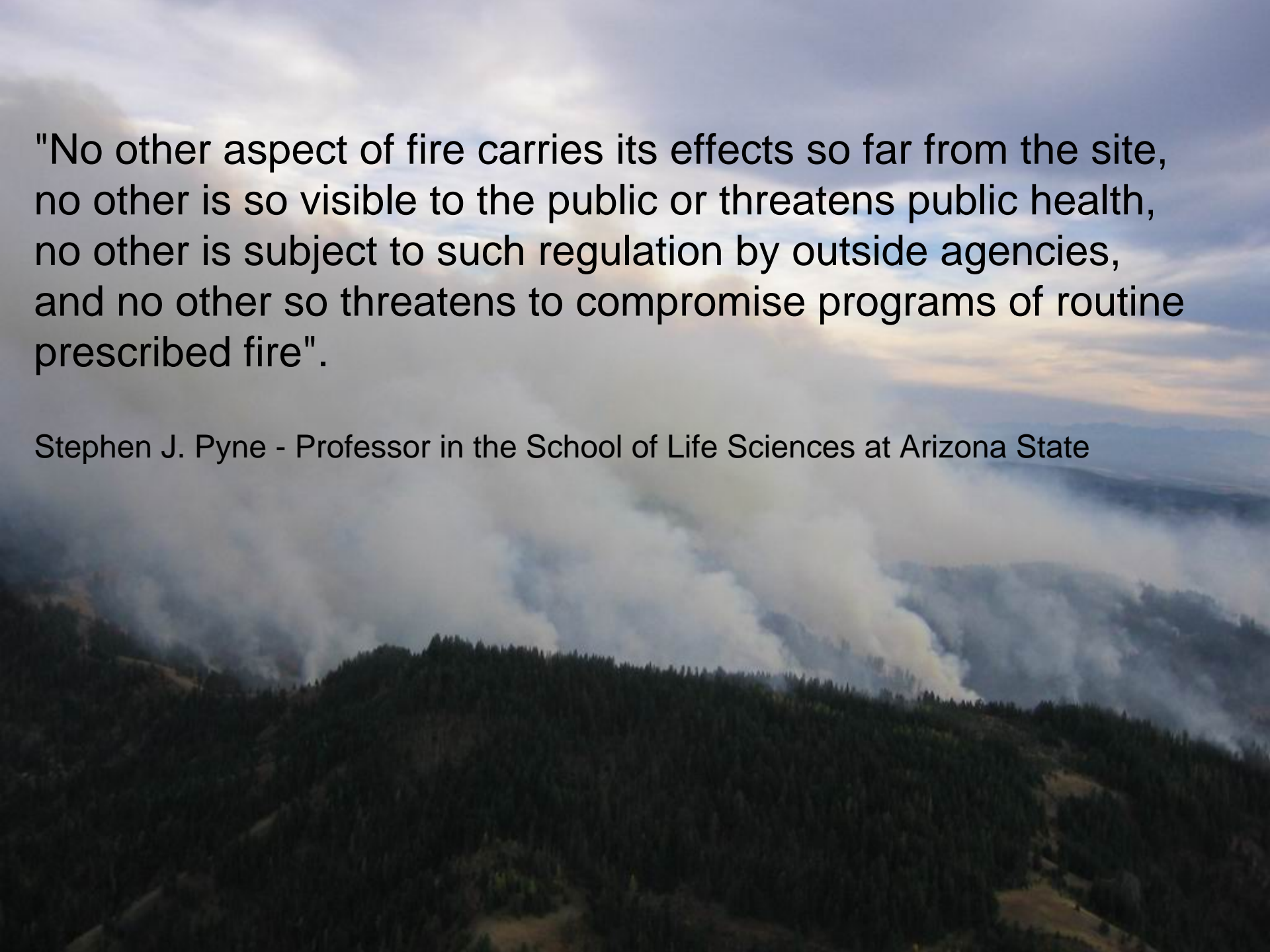
## Environmental Protection Agency 2006:

*“...Today we issue the Agency’s most protective suite of national air quality standards for particulate pollution EVER”.*



- U.S. EPA



A photograph of a large fire burning in a forest. Thick white smoke rises from the fire, filling the upper half of the image. The fire itself is visible as a bright orange and yellow glow in the center. The foreground shows a dark, dense forest of evergreen trees. The sky is a mix of blue and white, with some clouds.

"No other aspect of fire carries its effects so far from the site, no other is so visible to the public or threatens public health, no other is subject to such regulation by outside agencies, and no other so threatens to compromise programs of routine prescribed fire".

Stephen J. Pyne - Professor in the School of Life Sciences at Arizona State

# Smoke Management Techniques is Following the Law

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- Air Pollution Standards are established by Clean Air Act through EPA.
- Particulate matter is of most concern to those who conduct outdoor burning.



# State & Federal Air Quality Standards (Law)

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- NAAQS = Established to protect public health and welfare.
- NAAQS: Sulfur Dioxide, Nitrogen Dioxide, Lead, Particulate Matter, Ozone, Carbon Monoxide





# Pollution By The Numbers

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- 24-Hour PM-10 =  $150 \mu\text{g}/\text{m}^3$
- 24-Hour PM-2.5 =  $35 \mu\text{g}/\text{m}^3$
- Annual PM-2.5 =  $15 \mu\text{g}/\text{m}^3$

MANY SOURCES COMPETE  
FOR THE SAME AVAILABLE  
AIR SPACE .....









# To Stay Out of Trouble...

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Over a 24-hour period:

- ~10 - 30  $\mu\text{g}/\text{m}^3$  of PM-10; and
- ~7 – 10  $\mu\text{g}/\text{m}^3$  of PM-2.5.



# Air Regulator Duties

(implement the law)

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- Protect Public Health
- Protect Environmental Welfare
- Protect Visibility



Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



**Fine Particles Can Be  
Emitted Directly or Formed  
in the Air from Gases**

Cars and Trucks



Non-Road Vehicles



Forest Fires



Industrial Sources





# Federal Air Agency Reg.s

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- NEPA / FSM 5100 / Policy / Guidance
- CAA Sec. 116 – states / counties may have air regulations more stringent than EPA
- CAA Sec. 118 - federal agencies must comply with state / county air regulations



# Mt State Air Agency Reg.s

- Clean Air Act of Montana
- Administrative Rules of Montana
- Open burning permitting
- Smoke Management Program



# Mt County Agency Air Reg.s

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- County Programs with Open Burning Regulations:

Missoula

Cascade

Flathead

Yellowstone

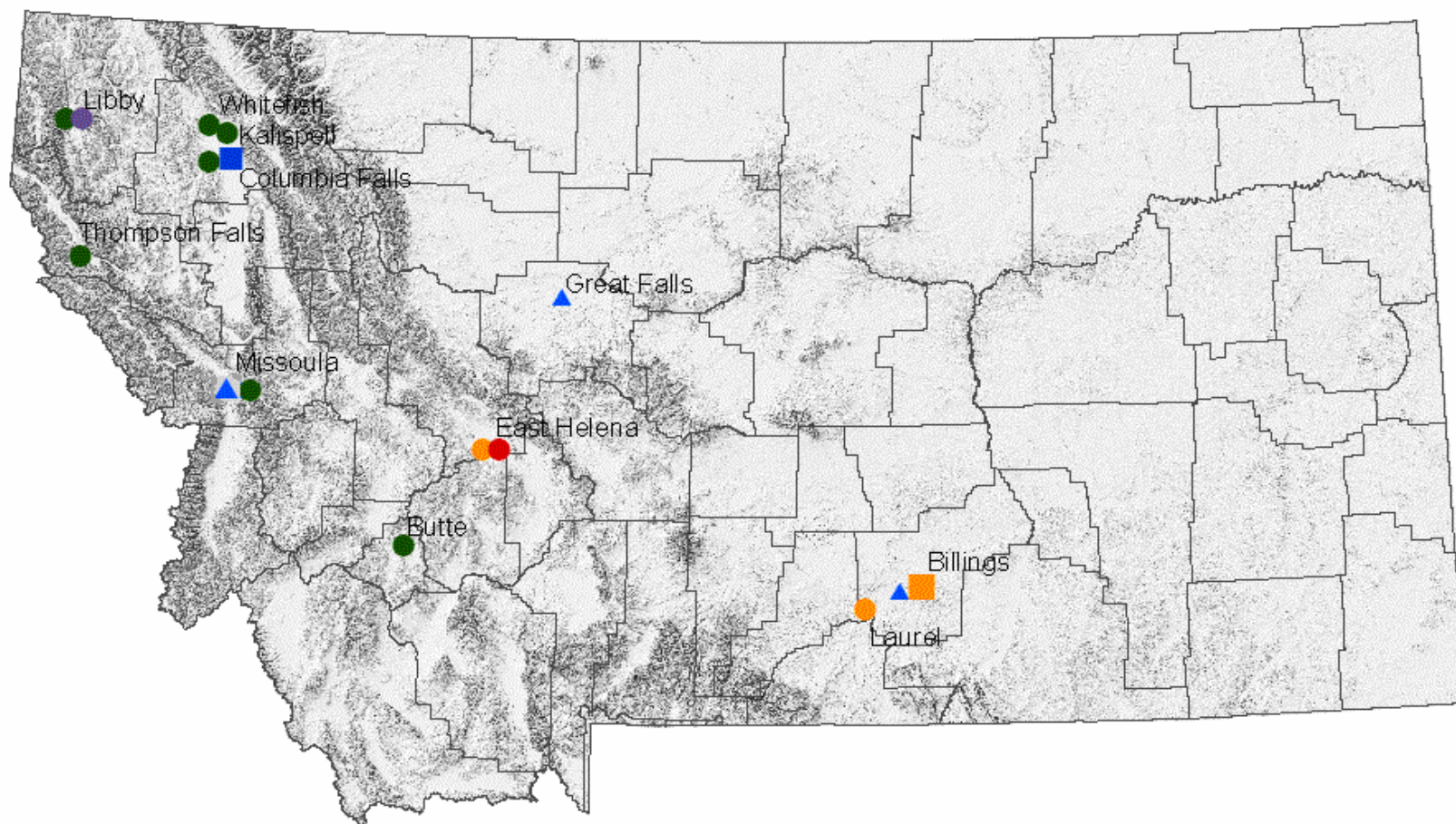
Lincoln





# Montana Community Designation Status

Reference: 40 CFR 81.327



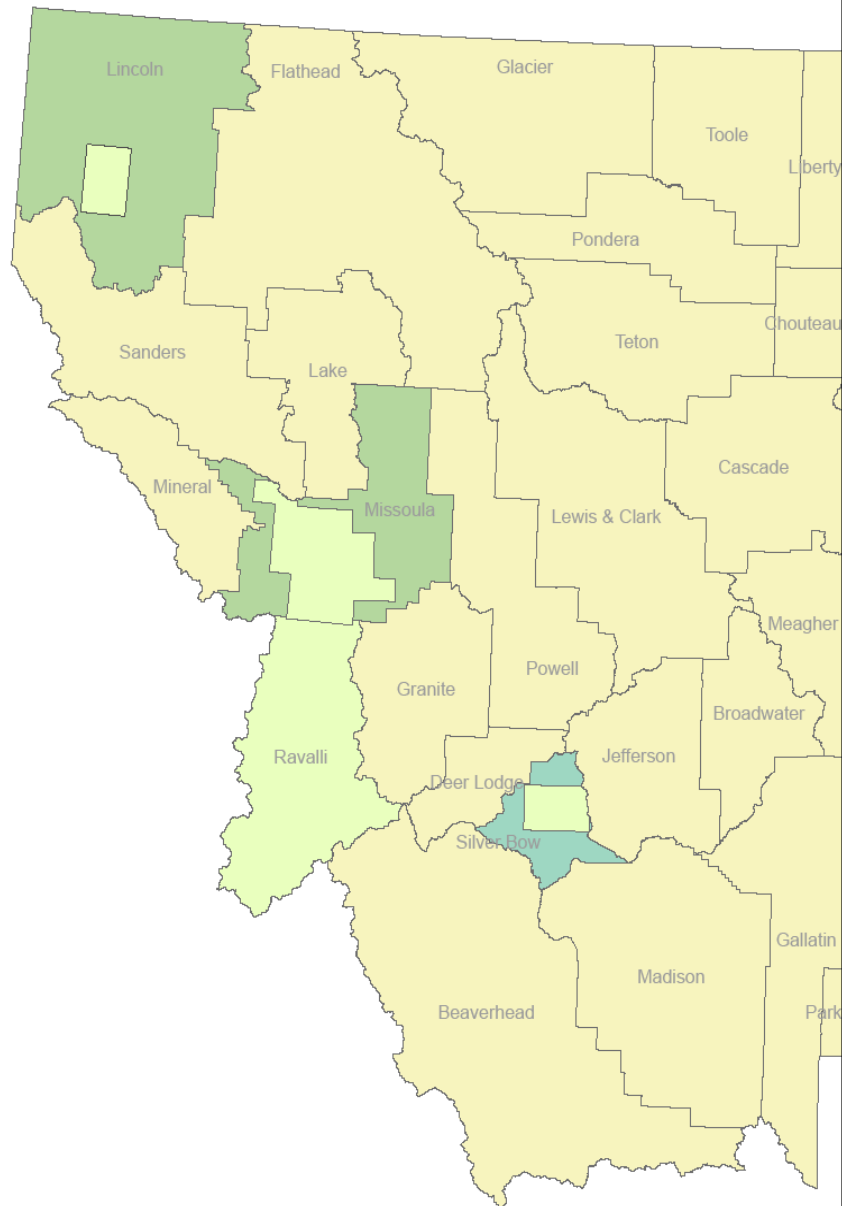
<u>Nonattainment</u>		<u>Attainment</u>	<u>SIP CALL</u>	
●	CO	▲	■	CO
●	PM10		■	SO2
●	PB			
●	SO2			
●	PM2.5			

# Montana PM-2.5 NAA

Current PM <sub>10</sub> NAA		Potential PM <sub>2.5</sub> NAA based on 2004-06 Data			
Location	Historic Max. Violation Value <sup>1</sup> (24-hr avg)	Location	24-hour avg. 98 <sup>th</sup> Percentile	Location	Annual Mean 3-yr average
Whitefish	333	Libby	43.1	Libby <sup>2</sup>	15.04
Butte	302	Missoula	41.2	Seeley Lake	10.8
Thompson Falls	261	Hamilton	37.7	Missoula	10.0
Kalispell	260	Butte	34.9		
Libby	256	Helena	31.9		
Missoula	239	Belgrade	29.1		
Columbia Falls	186	Seeley Lake	28.7		



# WESTERN MONTANA REGION POSSIBLE PM-2.5 NONATTAINMENT AREAS



# Best Available Control Technology 'BACT'

ARM 17.8.601(1) - Montana State Law

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1. Schedule burns during periods & seasons of good ventilation.
2. Applying dispersion forecasts.
3. Utilize predictive modeling.
4. Limit amount burned at one time.
5. Use ignition & burning techniques that minimize smoke production.

# Best Available Control Technology 'BACT'

ARM 17.8.601(1) - Montana State Law

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6. Select fuel preparation methods that minimize dirt & moisture.
7. Promote fuel configurations that create an adequate air-to-fuel ratio.
8. Prioritize burns to minimize impacts & assign control techniques accordingly.
9. Promote alternatives to burning.
10. Select sites to minimize smoke impacts.

# Major Open Burning Source Restrictions

ARM 17.8.610(4)

- (a) Conform with BACT; and
- (b) Comply with the conditions in the open burning permit.



# Know Your Air Quality Permit

Smoke Monitoring Unit - Montana / Idaho State Airshed Group - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Address <http://www.smokemu.org/links.php> Go

Links Personal Toolbar Folder Customize Links Free Hotmail Windows Windows Marketplace Windows Media

## SMOKE MONITORING UNIT

MONTANA / IDAHO STATE AIRSHED GROUP



**Links**

**Agency Web Sites**

- [Environmental Protection Agency](#)
- [Idaho Department of Environmental Quality](#)
- [Missoula County Burn Information](#)
- [Montana Department of Environmental Quality](#)
- [Citizen's Guide to Air Quality in Montana](#)

**MT/ID Airshed Group Documentation**

- [Montana/Idaho Airshed Group Operating Guide](#)
- [General Map of Airsheds and Impact Zones](#)
- [Annual Reports](#)
- [Contact List](#)

**Home**  
**About Us**  
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Done Internet

Start Docu... Inbo... RX-4... 1 Re... Smo... 1:27 PM



# Wildfire Air Quality Updates

Montana DEQ - Smoke Management and Forest Fire Air Quality Updates - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites

Address <http://www.deq.state.mt.us/FireUpdates/index.asp> Go

Links Personal Toolbar Folder Customize Links Free Hotmail Windows Windows Marketplace Windows Media

 Montana's Official State Website

DEPARTMENT OF ENVIRONMENTAL QUALITY

What are you looking for? DEQ Home Divisions Public Interest Online Services Contacts Search

**Fire & Smoke Management**

- Air Monitoring Particulate Data
- Air Quality Conditions Web Cam
- Health Effect Categories
- Breakpoint & Associated Visibility
- Visibility Ranges
- State & Federal AQ Standards
- Open Burning Information
- Prescribed Burning
- Other Interesting Fire Links

**Today's Air**

Forest Fire Smoke Report  
From State Medical Officer Steven D. Helgerson, MD, MPH Pertinent information on acute and long-term effects from smoke exposure.

**Montana Dept. of Public Health & Human Services** News Release on the health impacts of wildfire smoke.

Wildfire Smoke - A Guide for Public Health Officials

**Fire & Smoke Management in Montana**

**2007 Forest Fire Air Quality Updates**

Montana DEQ will be issuing daily forest fire smoke updates for the duration of the forest fire emergency. The reports are generally posted before noon. Occasional afternoon updates may be posted if deemed necessary. Residents experiencing smoke impacts should use the [VISIBILITY GUIDELINES](#) to evaluate their situation and guide their actions.

**Daily forest fire updates end as of today**

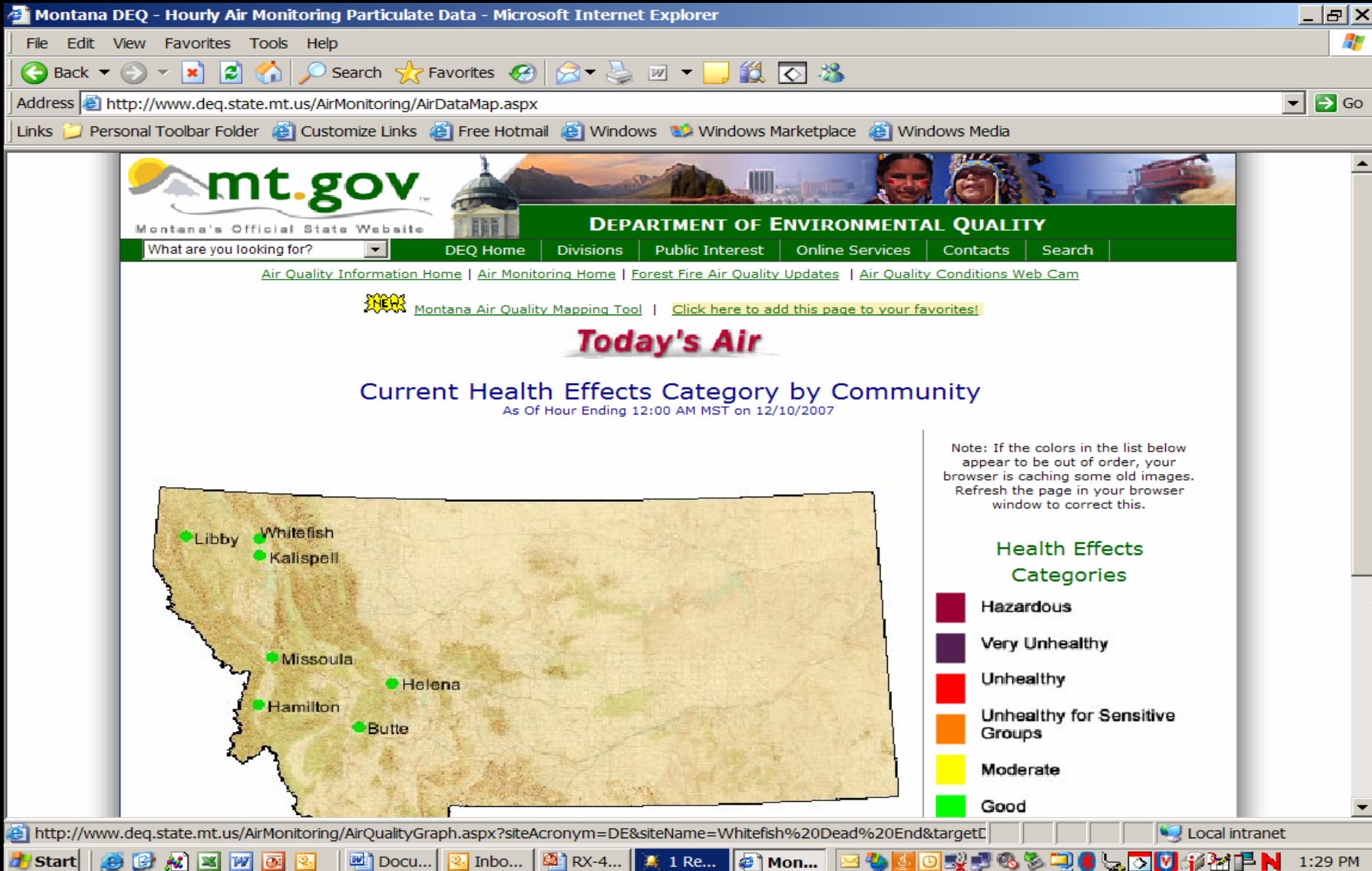
**Montana DEQ Forest Fire Smoke Advisory**  
**9/7/07**  
**10:00 AM Friday**

Widespread general smoke impacts are no longer occurring in the Big Sky state. Fire activity levels are much reduced with many fires receiving significant rain. A defining "season ending event" has not occurred and there is still a chance for some local impacts. Dispersion is often very poor in 9 and gets worse into October. Smoldering from the many acres that will remain hot until they are covered with snow may occasionally produce elevated smoke impacts under intense valley inversions. Residents noticing smoke from local fires should use the [VISIBILITY GUIDELINES](#) to determine

<http://mt.gov/default.asp> Local intranet

Start Docu... Inbo... RX-4... 1 Re... Mon... 1:28 PM

# Real Time Particulate Monitoring





# Conclusion

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- Recognize it's our Dilemma.
- Smoke management is LAW.
- Know your permit / regulations.
- Use Smoke Mgmt Techniques.





# Fuels Reduction Services

Jeff Haskell

(406) 799-3564 (w)

(406) 799-0141 (c)

[jhaskell@bresnan.net](mailto:jhaskell@bresnan.net)

